DOCUMENT RESUME

ED 427 598 HE 031 789

AUTHOR	Antony, James Soto; Raveling, Joyce S.
TITLE	A Comparative Analysis of Tenure and Faculty Productivity: Moving beyond Traditional Approaches. ASHE Annual Meeting Paper.
SPONS AGENCY	American Educational Research Association, Washington, DC.; National Science Foundation, Arlington, VA.; National Center for Education Statistics (ED), Washington, DC.; Office of Educational Research and Improvement (ED), Washington, DC.
PUB DATE	1998-11-00
NOTE	42p.; Paper presented at the Annual Meeting of the Association for the Study of Higher Education (23rd, Miami, FL, November 5-8, 1998).
CONTRACT	RED-9452861
PUB TYPE	Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	*College Faculty; Faculty College Relationship; *Faculty Evaluation; *Faculty Promotion; Faculty Workload; Higher Education; *Productivity; *Tenure
IDENTIFIERS	*ASHE Annual Meeting; *National Study of Postsecondary Faculty

ABSTRACT

This study explored the association between tenure and college faculty productivity by comparing the efficacy of traditional and alternative definitions of faculty productivity and different productivity measurement systems. Specifically, the study addressed how college faculty use their time, how time spent on "scholarly" activities compares to time spent on other activities, differences between tenured and nontenured faculty in traditional "scholarly" productivity, differences in productivity between groups when scholarship is defined more broadly, and policy implications for using traditional and nontraditional forms of productivity evaluation. Data were drawn from the 1993 National Study of Postsecondary Faculty which sampled 974 institutions and 31,354 faculty. Results show that faculty with tenure are not less productive than their counterparts without tenure. Tenured faculty teach less than nontenured faculty but engage in more service and administrative activity. Results suggest that post-tenure review systems often recognize the multidimensional nature of faculty work; they also suggest that pretenure faculty work that extends beyond the scope of traditional scholarship should be recognized as important in the tenure decision process. (Contains 72 references.) (DB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

HE

ED 427 598

Running head: TENURE AND FACULTY PRODUCTIVITY

A Comparative Analysis of Tenure and Faculty Productivity: Moving Beyond Traditional Approaches

James Soto Antony

Joyce S. Raveling

University of Washington

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

ASHE

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Paper presented at the 1998 annual meeting of the Association for the Study of Higher Education (ASHE), Miami, Florida.

HE 031 789

James Soto Antony is an Assistant Professor, and Joyce Raveling is a Doctoral Candidate, in Educational Leadership and Policy Studies at the University of Washington. Correspondence may be addressed to the authors at: University of Washington, College of Education, Box 353600, Seattle, WA 98195-3600. This research was supported by a grant from the American Educational Research Association which receives funds for its "AERA Grants Program" from the National Science Foundation and the U.S. Department of Education's National Center for Education Statistics and the Office of Educational Research and Improvement under NSF Grant #RED-9452861. Opinions reflect those of the authors and do not necessarily reflect those of the granting agencies.

BEST COPY AVAILABLE

ASHE *Association for the Study of Higher Education*

Headquartered at the University of Missouri-Columbia • College of Education • Department of Educational Leadership and Policy Analysis • 211 Hill Hall, Columbia, MO 65211 • 573-882-9645 • fax 573-884-5714

This paper was presented at the annual meeting of the Association for the Study of Higher Education held in Miami, Florida, November 5-8, 1998. This paper was reviewed by ASHE and was judged to be of high quality and of interest to others concerned with higher education. It has therefore been selected to be included in the ERIC collection of ASHE conference papers.

A Comparative Analysis of Tenure and Faculty Productivity: Moving Beyond Traditional Approaches

For decades, arguments for and against the system of awarding tenure to college faculty members have been raised, both in public forums and privately among scholars and administrators. Proponents of tenure argue tenure must be protected in order to preserve academic freedom and academic quality. Conversely, opponents argue tenure is an outmoded institution responsible for many of higher education's ills and deficiencies. Regardless of the arguments, most would agree that the intense scrutiny aimed at the tenure system is partially a product of the perennial call for increased accountability in higher education--particularly for faculty productivity (Arden, 1995; Benjamin, 1995; Blackburn & Trowbridge, 1972; Cotter, 1996; Ratliff, 1996). The accountability climate has led to the formation of several untested, though popularly advanced, ideas regarding tenure and faculty productivity. Among those voiced most frequently are that tenure enhances faculty productivity by encouraging academic freedom and recognizing excellence with job security. Other voices counter by saying that the freedoms and job security associated with tenure create certain disincentives for faculty to maintain high levels of productivity--allowing "dead wood" faculty to fill the halls of academe (Huber, 1992). Moreover, tenure has never fully protected intellectual freedom (Tierney, 1998b) and, even today, does not guarantee job security in the way most believe. Additionally, some scholars are exploring whether viable (and economically sound) alternatives to the tenure system have been developed that deserve further examination and consideration (Chait, 1976; 1977; 1994; 1977; 1982a; 1982b).

Tenure, or any alternative system, will always be criticized from the standpoint of how faculty productivity is affected. A system that enhances productivity while allowing institutions a certain degree of accountability is a notion many institutions are striving to further develop. How faculty work is evaluated and rewarded, both pre- and post-tenure, will be a central issue in the future (Boyer, 1990; Tierney, 1998a). Therefore, despite the menagerie of ideas regarding faculty productivity and tenure, the current accountability climate places tenure under a hot light of suspicion and scrutiny. As such, tenure's association with faculty productivity across higher education will not only remain an important topic, but will also steer how legislators, administrators, and faculty define--and possibly refine--faculty roles and the institution of tenure itself in the years to come. The purpose of this study is to explore the complex association between tenure and faculty productivity, comparing the efficacy of traditional and alternative definitions of faculty productivity in an effort to begin critically examining the implications of different productivity measurement systems on tenure-related policy formation.

Background

Most faculty members fulfill multiple roles in academe yet arguments over faculty productivity often center only on the continuing conflict between the demands of research and teaching. In recent years, scholars have argued that this tired argument between teaching and research creates a "one size fits all" mentality (Bean, 1998) in which one--usually research--is valued more than teaching. The rigidity of this dualistic framework makes it difficulty to take into account the differing types and missions of institutions (Chan & Burton, 1995). Additionally, the hierarchical nature of the teaching versus research argument invariably results

in the work of some types of scholars being valued at the expense of other scholars'; the work of faculty of color (Antonio, 1998) and women (Park, 1996) is too easily discounted.

In Scholarship Reconsidered: Priorities of the Professoriate, Boyer (1990) recommended replacing this limited view of faculty work as a conflict between research and teaching activities. Rather than continuing to pit these functions against each other, Boyer suggested that not only are both important forms of scholarship but also that even when they're combined, they fail to encompass a full range of scholarly activities. He recommended re-conceptualizing scholarship as a set of four distinct, yet overlapping, dimensions of activity: the scholarship of discovery, the scholarship of integration, the scholarship of application, and the scholarship of teaching. Despite recent criticisms that Boyer's work does not address deeper hierarchical structures within academe (Davis & Chandler, 1998), his framework still provides a valuable model for better understanding the broad range of faculty work in academe.

The scholarship of discovery is fundamentally the work now recognized and rewarded as basic research. It encompasses the work of vigorously pursuing knowledge, of eroding and pushing back the current boundaries of human knowledge. It is seldom adequate to apply knowledge only in one discipline and the scholarship of integration is that integration and application of knowledge, which includes various forms of inquiry, across disciplines. It is also concerned with meaning--what does knowledge, or broad areas of knowledge applied, or specialized knowledge broadly applied--mean? These questions are at the heart of the scholarship of integration.

The scholarship of application takes the use of knowledge one step farther and values the use of knowledge inside and outside academe. Commonly lumped under the heading of

"service," it is applying knowledge and expertise to global and local societal problems and issues. Faculty work and membership in the global and local communities are recognized and valued. The final function, the scholarship of teaching, is not relegated to second place, or first place, depending on the institutional mission. It is instead a full valuing of the work of engaging with students in the process of education. While pursuing knowledge for its own sake (as in the scholarship of discovery) is an important endeavor, it loses meaning if no one can understand it. The scholarship of teaching is based on the various means faculty use to actively engage students in knowledge, what that knowledge means, and application of that knowledge.

These forms of scholarship are obviously inter-related. Moreover, the richness of the academic enterprise overall is based upon a coalescence of the individual excellence of scholars in different domains. This is to say that not all faculty members are equally inclined to excellence in the same areas of scholarship. As such, the academic enterprise achieves quality through an integration of, and a collective reliance upon, the efforts of different faculty members who, individually, excel to a different degree along each of Boyer's four dimensions of scholarship. Moreover, achievements in one scholarship domain are integrally related to, or inform, achievements in others. For example, the scholarship of teaching loses value if teachers are disengaged from the findings in the scholarship of discovery. If none of the findings in the scholarship of discovery are understood or used, they lose all meaning and if the fruit of the scholarships of discovery and integration cannot be shared with both students and the larger community, academe, indeed, becomes the impenetrable ivory tower.

Because any policy approaches or revisions to the tenure system in the future will be derived partially from the research on tenure and faculty productivity, extant literature must first

be broadened before we can comfortably allow it to guide policy formation. For example, faculty productivity is typically defined and measured in much of the literature primarily in terms of the production of traditional forms of scholarship, namely, Boyer's scholarship of discovery dimension (Abdel-Ghany, 1982; Allen, 1995; Bailey, 1992; Bean, 1982; Bieber & Blackburn, 1993; Blackburn & Bently, 1993; Centra, 1983; Christensen & Jansen, 1992; Eash, 1983; Feldman, 1987; Finkelstein, 1982; Flanigan & et al., 1988; Golden & Carstensen, 1992; Holley, 1977; Ingalls, 1982; Jordan & et al., 1989; Kelly, 1986; Kohlenberg, 1992; Levin & Stephan, 1989; Linsky & Straus, 1975; McGee & Ford, 1987; Meador & et al., 1992; Michalak & Friedrich, 1981; Neumann, 1979; Noser & et al., 1996; Over, 1982; Ramsden, 1994; Ross & Donnellan, 1991; Rushton & Meltzer, 1979; Schultz & Chung, 1988; Sefein, 1973; Smith, 1983; Tien & Blackburn, 1996; Wanner, 1981; West, 1980).

There is no argument that traditional forms of scholarly productivity are important elements of faculty work. However, a strict focus on only one form of scholarship has already hampered researchers' and policy makers' abilities to adequately account for variations in faculty productivity over an evolving career period (Schuster, 1989). Moreover, in the push for greater accountability for higher education, such unitary orientations toward faculty work have set the stage for many state legislative bodies to establish assessment mandates that, though manifestly aimed at illuminating faculty workload issues (Hauke, 1994; Hines & Higham, 1996; Kennedy, 1995; Layzell, 1996; McGuiness, 1994; Miller, 1994; Presley & Engelbride, 1998), nonetheless are employed as a way of further teasing out the relationship between and tenure and faculty productivity. Such mandates, often adopting punitive performance-based funding structures, not only fail to recognize the diversity of faculty work in different types of institutions, but serve to

perpetuate the belief that college faculty members' work can be defined in simplistic, singular ways. More disturbing, however, the results of such assessments often become conflated with ongoing debates surrounding the tenure system, fueling the tendency to draw potentially spurious relationships between faculty productivity (inadequately, or incompletely, measured) and the tenure status of given faculty members.

Therefore, by also including other aspects of work when examining faculty productivity (Fairweather, 1991), and by conducting comparative studies of faculty work at different types of institutions, both the literature--and the dialogue surrounding tenure--can become richer. Generally speaking then, the purposes of the proposed study are twofold. Most research on tenure and faculty productivity is largely based upon single-institution data, or unnecessarily favors an examination of research universities at the exclusion of other types of institutions. As such, the first goal of this study will be to develop a nationally representative comparative picture of the different ways pre- and post-tenure faculty among various kinds of institutions use their time. This descriptive picture, to be developed using data from a recently completed survey of over 31,000 faculty across 974 different institutions, is a necessity as we begin to think about developing policies regarding tenure and faculty evaluation systems. Moreover, it will then provide an empirical basis for examining what is meant by faculty productivity, how various types of productivity differentiate pre- and post-tenure faculty, and whether productivity must be redefined--the second goal of the proposed study. Understanding how productivity is defined, and whether it should be redefined, is an important yet currently unresolved issue lying at the heart of any proposed modifications or alternatives to the tenure system. Therefore, this study proposes to explore the complex association between tenure and faculty productivity, comparing

the efficacy of traditional and alternative definitions of faculty productivity in an effort to begin critically examining the implications of different productivity measurement systems on tenure-related policy formation. In so doing, this study provides an important contribution to the literature that can inform policy level discussions regarding the creation of alternative faculty evaluation and review systems. In summary, this study sets out to address the following research questions:

- Overall, in what ways do college faculty use their time?
- Specifically, how does time spent on activities traditionally considered to be scholarly in nature compare to time spent on other activities? To what extent is this different both between and among tenured or non-tenured faculty, and for faculty across different types of institutions?
- When defined only in traditional scholarly terms, is there a significant difference between tenured and non-tenured faculty productivity? How does this play out for faculty across different types of institutions?
- When defined more broadly than just traditional forms of scholarship, is there a significant difference between tenured and non-tenured faculty productivity? How does this play out for faculty across different types of institutions?
- What are the policy implications for using a productivity evaluation system that focuses simply on traditional forms of scholarship or on broader activities as well? Specifically, what are the implications for pre- versus post-tenure faculty and faculty at different types of institutions?

Methodology

Description of the Data

Data for this study were derived from the 1993 National Study of Postsecondary Faculty (NSOPF '93), sponsored by the U.S. Department of Education's National Center for Education Statistics. The first cycle of NSOPF '93 was completed in 1987-88 with a sample of 480 institutions and 11,000 faculty. The second cycle of NSOPF '93, and the focus of this study, sampled 974 institutions and 31,354 faculty. NSOPF '93 data provide a national profile of faculty including their professional backgrounds, responsibilities, workloads, salaries, benefits, and attitudes.

Using the 1991 Integrated Postsecondary Data System universe of institutions, a two-stage stratified clustered probability design was used to select a sample of 974 institutions. In the first stage, a modified Carnegie classification system was used to identify and stratify institutions by control and type. There were two levels of control, public and private, and several institutional types including research universities, other doctoral granting universities, comprehensive colleges and universities, liberal arts colleges, two-year colleges, independent medical schools, and religious colleges. At the second stage of sample selection, the sampling frame consisted of lists of faculty obtained from the 843 identified institutions that agreed to participate (84.9 percent institutional-level response rate). Each institution was randomly assigned a target total sample size of forty-one or forty-two faculty members. This yielded the desired cluster size of 41.5. Overall, 31,354 faculty were sampled, with a total of 25,780 interviews being successfully completed (86.6 percent individual-level response rate). The NSOPF '93 faculty survey data were collected using a multi-modal data collection design that combined an initial mail survey with

mail and telephone prompting supplemented by computer-assisted telephone interviewing (CATI).

Variables & Analytic Approaches

Outside of some conceptual pieces arguing for a broadening of how faculty work is defined and rewarded (Baldwin, 1983, 1990; Boice, 1984; Boyer, 1990), no recent, nationally-representative empirical work examines the multiple ways in which faculty are productive. Moreover, no work exists showing how these multiple dimensions of productivity differ for faculty at different types of institutions and among faculty who are tenured or not tenured. As such, the proposed study is divided into two sequential phases.

The primary phase of this study examined the multiple ways in which faculty at different types of institutions use their time. This descriptive picture of faculty work provides the basis for exploring what is meant by faculty productivity, and whether this must be redefined. The variables used for this first part of the study were derived from several NSOPF items that asked faculty members to report the numbers of hours spent engaged in various activities. Variables chosen were indicators of time use and productivity. In particular, variables that were traditional measures of faculty productivity or other, less traditional, forms of activity were identified. These specific variables include survey items about traditional scholastic activities (e.g., writing, research, grant production, experimentation, and so on) as well as variables that are more objective measures of those traditional activities (e.g., numbers of articles, grants, contracts, books, and so on). Additionally, other specific activity variables on the survey used were those not typically viewed as traditional scholarship activities (e.g., time spent teaching, advising students, working on committees, and engaging in a variety of other service activities).

Therefore, this first phase of the study examined--both overall and in a comparative fashion--the multiple ways in which faculty members (nationally, as well as across different institutions, both pre- and post-tenure) reported using their time, and what they reported as the products of their work. This was accomplished through examinations of the marginal distributions of faculty time on each of the above mentioned activity variables (i.e., using standard cross-tabulations and other contingency tables).

The second phase of this study explored the association between tenure status and the above mentioned faculty productivity variables. Essentially, this phase was an empirical examination of how current faculty (both tenured and non-tenured) compare on two evaluation philosophies or strategies. The first strategy (and the most prevalent in practice today) relies only on a traditional-scholarship dependent measure of productivity. The second strategy employs a broader definition of scholarship by recognizing both traditional scholarly activity as well as activities not considered traditional forms of scholarship. A primary step in preparing for this series of analyses was to create scales representing traditional and nontraditional dimensions of faculty productivity. Both the traditional-scholarship (TS) scale and the nontraditional-scholarship (NS) scale were created using each of the activity variables employed earlier in this study, grouping these variables according to their conceptual fit in either the traditional category or the nontraditional category, as guided by the results of a factor analysis. Once the components of these two scales were determined, a third scale representing a broader, more inclusive productivity evaluation strategy was created. Essentially, the broad scholarship (BS) scale was an additive scale where the standardized scores on the traditional scholarship and nontraditional scholarship scales were combined.

As implied in the research questions, analyses compared pre- and post-tenure faculty members' levels of productivity using the traditional productivity evaluation strategy, the nontraditional productivity evaluation strategy and the broad productivity evaluation strategy as the dependent variables. These comparisons of productivity between pre- and post-tenure faculty along each of these three scales were accomplished using analyses of variance (ANOVAs), a stringent alpha coefficient of $p < .001$ (given the size of the sample), and appropriate *post-hoc* tests (i.e., Tukey and Scheffé). More complex comparisons of the difference in productivity (along the TD, ND, and BD scales) among pre- and post-tenure faculty at various types of institutions were also accomplished using multi-way analyses of variance (ANOVAs).

Results

Ways in which Faulty Use their Time

A central argument aimed at the tenure system is that it fuels complacency with respect to teaching and inefficiency overall. Moreover, tenured faculty members are often characterized as likely to engage in research activities at the expense of other important activities such as teaching. Tenured faculty members are stereotypically believed to be more likely to work fewer hours than their tenure-track and non-tenure track counterparts and are popularly perceived as more likely to become unproductive over time. Interestingly, these conceptions of tenure and faculty productivity are not based upon empirical data. Empirically based comparisons, sorted by tenure status, of how faculty report using their time would shed light on the validity of these conceptions and popular notions of faculty productivity and tenure. These comparisons begin with the data depicted in Table 1.

Table 1 depicts the average percentage of overall weekly time faculty report spending on each of six broad areas that typically define the faculty role. Percentages are provided for faculty who have tenure, do not yet have tenure but are on the tenure track, are not on the tenure track, or who are at institutions where there is no tenure system. As shown in Table 1, faculty members with tenure devote a smaller percentage of their time (55.14 percent) to teaching than do other faculty. Faculty members at institutions that lack a tenure system spend most of their time (65.15 percent) teaching. However, regardless of tenure status, the majority of all faculty members' weekly time is spent engaged in teaching activities, with no group committing less that 55 percent of their weekly time to teaching. This series of findings is important because, contrary to popular belief, teaching is clearly the area of work where all faculty in aggregate--regardless of tenure status--spend the majority of time. Said differently, there may be a negative relationship between having tenure and the overall proportion of time a faculty member commits to teaching. However, it is clear that tenured faculty overall are not neglecting the teaching function of their jobs and, relative to other activities in which they are engaged, are spending the largest percentage of their overall weekly work time engaged in teaching activities.

Table 1 also shows that although tenured faculty members spend a slightly smaller percentage of their time engaged in research (16.12 percent) than do pre-tenure faculty members (18.18 percent), tenured faculty spend more of their time engaged in administrative duties (14.27 percent) compared to all other types of faculty. It has been implied that in addition to the autonomy and protections of academic freedom that tenure affords faculty, having tenure also allows individuals to more fully engage themselves in administrative activities that better institutions and communities. These data lend support to this idea.

Overall, although faculty without tenure spend a larger percentage of their time than tenured faculty engaged in service activities, professional development, and consulting, tenured faculty are spending nearly as much, if not more time engaged in teaching, research and service as are other faculty members. Moreover, all faculty members, regardless of tenure status are working long hours. This can be seen in Table 1, which shows that regardless of tenure status, faculty members work more than the typical 40-hour workweek, with no group working fewer than 48 hours per week. Simply said, all types of faculty members work long hours engaged in complex work that extends beyond the scope of simply research or teaching. Moreover, although there are always individual exceptions, post-tenure faculty overall (who engage in nearly 60 hours of work per week) cannot be categorically summarized as "dead wood," or as spending the vast majority of their time engaged in activities not directly beneficial to student learning, service, and administration.

Despite some obvious variations, the data in Table 1 suggest overall that there is little meaningful difference between the time allocation of pre- and post-tenure faculty. Moreover, Table 1 shows that all faculty members work long hours engaged in a variety of activities. Clearly, non tenure-track faculty are more engaged in teaching, and tenure track faculty are more engaged in research. However, the meaning and practical significance of such variations are in the eyes of the beholder. One thing is certain--these variations are more likely a function of the types of institutions where faculty work (with Research Universities typically emphasizing research and other colleges emphasizing teaching), rather than solely being the result of the tenure system.

Comparisons between tenured and pre-tenure (i.e., tenure track) faculty time allocation, along with overall weekly hours spent working as a function of the type of institutions in which they are employed, are depicted in Table 2. Consistent with previously discussed results, tenured faculty members (when comparing across like-institutions only) spend slightly less of their overall time engaged in teaching than do pre-tenure faculty. This seems to be particularly true for faculty at Comprehensive and Liberal Arts colleges--institutions less likely to include research as a significant component of their missions. Moreover, while tenured faculty at Comprehensive and Liberal Arts colleges spend a smaller percentage of their time teaching than do their pre-tenure counterparts at like institutions, pre- and post-tenure faculty at Research Universities and two-year colleges spend nearly equal amounts of their time engaged in teaching as do their counterparts.

Also consistent with earlier findings, despite spending a smaller percentage of time teaching, tenured faculty members at all institutions devote nearly equal, if not greater percentages, of time compared to pre-tenure faculty engaged in research and administrative work. Specifically, Table 2 shows that in two-year colleges, post-tenure faculty spend substantially greater amounts of their time engaged in administrative work and service activities than do their pre-tenure colleagues whereas pre-tenure faculty engage in more service-related activity.

As would be expected, faculty members at Research and Doctoral institutions spend more of their time than faculty at other institutions engaged in research. On a separate note, faculty at two-year colleges spend nearly 10 percent of their time (regardless of tenure status) engaged in research. This is intriguing because, at two-year institutions, the awarding of tenure is almost entirely based upon teaching effectiveness and quality. Why faculty members at two-year

colleges conduct research is unclear, but further points to the multidimensionality of faculty work across institutional type. In any case, what is fascinating is that across all institutional types, faculty spend no more than a third of their time conducting research, and all faculty spend more of their time teaching than conducting research--even at research universities.

Overall then, although institutional type has some obvious effects on how faculty spend their time, faculty overall engage in more teaching than research, and tenured faculty, though teaching less than pre-tenure faculty, find themselves spending more of their time engaged in administrative duties. Also evident from these data is the fact that after tenure, all faculty members in all institutions spend a smaller percentage of their time engaged in teaching and research. Specifically, these data indicate that these post-tenure faculty "shift" towards devoting a greater percentage of their time to activities that are not typically rewarded by institutions but are nonetheless contributions by faculty that assure institutional vitality and viability.

Mirroring the results shown in the earlier table, Table 2 also indicates that faculty across institutional type and tenure status work more hours than most employees devote to the typical workweek, with all faculty members spending anywhere from 47 to nearly 60 hours per week on work-related activities. This, of course, does not take into account hours these faculty members might work at home preparing classes or grading papers. In all, these data paint a picture of a national post-secondary faculty workforce that is highly engaged, working many hours, and devoting a great deal of time to teaching. Moreover, these data illustrate that, regardless of institutional type, post-tenure faculty are substantially engaged in their work as a whole and are not working fewer hours than their counterparts outside of academe.

Lastly, and most importantly, Table 2 shows there is no single explanation that adequately describes how all faculty members spend their time. At research universities, faculty members spend nearly equal amounts of time engaged in both teaching and research, regardless of tenure status. At the remaining institutions, teaching outweighs other activities in terms of proportion of time spent. At all institutions, there is a fairly consistent devotion of time to administrative work, with tenured faculty spending more of their time engaged in these activities than their pre-tenure colleagues. Likewise, it appears that service activities play a larger role in terms of how faculty at research universities and two-year colleges (both institutions with highly visible public agendas) spend their time than in terms of how faculty members at other institutions spend their time.

Consequently, a single standard for judging the productivity of post-secondary faculty is unreasonable. Tenured and pre-tenure faculty at different types of institutions engage in the same types of work, but in different proportions. To judge faculty productivity solely in terms on one aspect of the faculty role (e.g., research or teaching only) negates the substantial work faculty at different institutions devote to other meaningful tasks. The data presented here suggest that a multidimensional definition of faculty productivity is necessary to understand how faculty members spend their time and to make useful comparisons of productivity as a function of tenure status.

The next section of this study will build upon the notion that a multidimensional definition of faculty productivity is most useful when assessing and comparing faculty work. Specifically, this section will empirically test the difference between pre-and post-tenure faculty members' levels of productivity, employing both traditional and nontraditional indicators of faculty productivity.

Pre-tenure versus Post-tenure Faculty Productivity

In the current climate of accountability, many legislative bodies have mandated increased accountability for faculty work and, more often than not, tenure has been raised as the barrier to improved faculty productivity and efficiency. In some states, such as Minnesota, Texas, and Washington (Zumeta, 1998), these calls for accountability have led to the creation of faculty productivity and efficiency indicators—measures that are uniformly applied to all institutions. Such a uniform application of these indicators allows the possibility for some, in an effort to prove how tenure negatively affects productivity and efficiency, to compare faculty with tenure at research universities against those without tenure at two-year colleges. What is obviously most disturbing about this sort of approach is that it implicitly treats all faculty members the same, comparing faculty across different institutional types. As has already been shown, college faculty members, regardless of institution, engage in comparable activities to a different extent. Therefore, it is not useful to test whether faculty members in one institutional type engage in significantly more or less teaching, research or service than faculty in another institutional type--we know from the earlier results that they do. Instead, the policy question of import is whether, within a given institutional arena, tenured faculty members are less productive than their non-tenured counterparts and, if so, in what sorts of activities. Toward answering this question, the remainder of this study will test whether there are significant differences in various types of productivity between pre- and post-tenure faculty within the same institutional type, rather than across institutions.

Creating Scales Representing Traditional, Nontraditional, and Broad Forms of Productivity

Scholarly productivity is typically used within higher education as the primary indicator of faculty vitality. On the surface, this appears to be an excellent way to compare pre-tenure and post-tenure faculty productivity, but the results shown previously in this study indicate that accounting for productivity is more complex than the traditional measures allow. In particular, college faculty members--especially those at institutions whose primary focus is research--devote time to many activities that would not fall under the umbrella of traditional scholarship. Therefore, faculty productivity should be compared using multiple indicators rather than simply relying on traditional scholarship.

Table 3 shows factor analysis results, grouping conceptually similar productivity items into one of two scales, either the traditional scholarship scale (TS) or the nontraditional scholarship scale (NS). The results of separate (not shown here) confirmatory factor analyses indicate that these two scales are generally invariant across pre- and post-tenure faculty groups, and for faculty at different types of institutions. These two scales are therefore accepted as appropriate combinations of items representative of traditional and nontraditional notions of productivity for the different types of faculty examined in this study. Table 3 also describes the composition of a third scale--the broadly defined scholarship scale (BS). The BS scale is simply the standardized composite of the TS and NS scales. Table 3 lists the items making up each of these scales, along with the internal consistency or reliability of the TS and NS scales.

As seen in Table 3, the TS scale include items faculty produced over the last two years that are typically included as measurements of research or publication productivity. These are

things Boyer (1990) would have called the scholarship of discovery such as the number of refereed articles, the number of books and chapters, the number of book reviews, the number of reports, and the number of exhibitions or presentations.

Nontraditional forms of scholarship are in keeping with the spirit of Boyer's (1990) notion of a broader definition of scholarship (i.e., the scholarship of integration, the scholarship of application, and the scholarship of teaching). Such nontraditional scholarly activities are termed as such simply because they are not traditionally rewarded or recognized by the faculty reward structure. These activities are those which, though important to the intellectual enterprise and faculty work, are traditionally not subsumed under the category of publication productivity. For the purposes of this study, the NS scale included faculty members' involvement, during the fall term of 1992, in service to students such as the number of undergraduate and graduate thesis committees on which the faculty member served. Other nontraditional forms of scholarship included fall term service to the university through governance-oriented committee work. Lastly, various teaching-related indicators such as the total fall term hours per week teaching for credit, the total fall term contact hours per week a faculty member engages in individualized instruction of students, and the total classroom credit hours the faculty member carries in the term were also included.

Comparing Faculty Productivity across Tenure Status

Table 4 first shows the mean frequency along each of the individual items making up the TS and NS scales, by faculty member tenure status. This table also shows the average composite scale scores for these faculty members along the TS, NS, and BS scales. After initial analyses of variance were conducted, all possible pair-wise comparisons (i.e., across levels of tenure status)

derived from the figures in Table 4 were also tested using Scheffé post-hoc tests; these were all found to be significant at the $p < .001$ level.

As we can see from Table 4, over the last two years tenured faculty produced significantly greater numbers of articles, books, chapters, book reviews, reports, exhibits and presentations than their non-tenured counterparts. This significant difference favoring tenured faculty also is evident in the composite of traditional scholarly activities (TS Scale), where tenured faculty receive a score of 3.02 versus scores of 2.57, 2.41 and 1.79 for each of the three non-tenured faculty subgroups. Overall, then, faculty with tenure appear to be significantly more productive in terms of traditional forms of scholarship than are their non-tenured counterparts. Much of this difference is a function of experience, with tenured faculty in this data set having had, on average, 17 years of experience compared to non-tenured faculty members' average 6 years of experience. Moreover, tenured faculty members have had much more time to develop substantial research agendas that lend themselves to the production of traditional scholarly materials, whereas non-tenured faculty members are still in the process of developing those agendas, or are not expected to do so. Nonetheless, there is no empirical evidence to suggest that, over a given two year period, tenured faculty members are less productive, in terms of traditional forms of scholarship, than their pre-tenure or non-tenured colleagues.

In terms of nontraditional scholarship, tenured faculty members continue to display greater productivity than their non-tenured counterparts. The only nontraditional scholarship indicators that place tenured faculty productivity behind that of other faculty members are in the total hours per week teaching for credit ($M = 8.60$), and the total classroom credit hours ($M = 7.71$). Of course, tenured faculty appear to spend significantly greater amounts of their time in

undergraduate, graduate, and non-student committee work (M = 0.92, 6.13, and 7.06, respectively) than non-tenured faculty. Such committee work is the foundation of much of students' educational experiences, from general examinations to theses. Additionally, non-student committee work is the basis for governance and policy making at most institutions. Therefore, these nontraditional forms of productivity are, arguably, as important to the overall educational mission of many institutions as are more traditional forms of scholarship. What is clear from these data is, once again, there is little empirical support for the idea that tenured faculty are less productive, even in terms of nontraditional scholarship, than their non-tenured colleagues. This, as would be expected, is also reflected in the fact that tenured faculty received a higher score (M = 6.85) than all other faculty on the scale of nontraditional scholarship (NS scale). Overall, whether faculty productivity is defined in terms of traditional or nontraditional forms of scholarship, tenured faculty members show higher levels of productivity, in most cases, than their non-tenured counterparts. Table 4 also indicates that, when productivity is construed even more broadly (as a combination of traditional and nontraditional scholarship, using the BS scale), tenured faculty once again outpace other faculty (M = 4.93 for tenured faculty).

In comparing productivity of pre- and post-tenure faculty within different institutional types (Table 5), it is clear that the patterns of the previous table remain consistent. Tenured faculty members are more productive than within institution pre-tenure colleagues in all cases, except for a few notable areas pertaining to teaching activities. Specifically, in the nontraditional scholarship subset of activities, tenured faculty engage in significantly less total weekly teaching hours, weekly individualized instruction contact hours, and total classroom credit hours than do

pre-tenure faculty. As before, this lesser time commitment appears to be balanced out by tenured faculty members' greater engagement in committee-related activities.

In terms of the three composite measures of productivity, it is clear that in most instances, post-tenure faculty members are more productive than pre-tenure faculty. Only within Liberal Arts and two-year colleges do pre- and post-tenure faculty show equal levels of productivity along the TS scale. Once again, there is little empirical evidence to suggest that faculty in the post-tenure years are less productive than those who do not have tenure.

Table 5 is perhaps most useful in showing the degree of variation across institutional types in every individual indicator of productivity. It is clear from this table that comparing faculty across institutional types would yield tenuous interpretations at best. Nonetheless, a careful comparison shows that a simple focus on traditional scholarship as a means for assessing productivity would over-advantage faculty at research and doctoral institutions and disadvantage faculty at other types of institutions. Interestingly, however, comparisons across institutional type of faculty productivity on the individual items incorporated in the nontraditional subset of productivity items shows that these items tend to generalize well across institutional type. Said differently, regardless of where a faculty member works, it appears that teaching, service and committee work (nontraditional forms of productivity) occupy a substantial amount of time and effort, even though in many of these institutions, these forms of productivity have little to do with the awarding of tenure. Faculty members, regardless of tenure status, appear to be committed to teaching, service, and committee work. Clearly, if these forms of work are not regarded when assessing faculty members' overall efficiency and productivity, then a substantial component of the faculty role is being disregarded.

Discussion and Conclusion

The tenure system, or any alternative system, will always be criticized from the standpoint of how faculty productivity is affected. From the initial data presented here, it is clear that the manner in which productivity is defined influences how various types of faculty members' levels of productivity can be assessed. If we rely on traditional definitions of productivity that focus entirely on publication of scholarly materials, then non-tenure track faculty will appear less productive than faculty with tenure. Likewise, if we were to merely see teaching and teaching related activities as the primary indicator of productivity among faculty, then those with tenure would certainly appear less productive than would other faculty members.

The bottom line is that faculty work is complex and multidimensional. What work activities faculty members engage in is as much a function of institutional mission as it is of personal choices, inclinations, and abilities. Faculty members at different types of institutions are mandated to perform different types of tasks and, in most cases, are rewarded only for productivity in those domains. Therefore, simple accountability measures, and ones that attempt to compare faculty productivity across institutional type, need to be re-conceptualized in order to avoid misinterpretations of the faculty role.

What this study clearly shows is that faculty members with tenure are not less productive than their counterparts without tenure. Surely, there are changes in the levels of productivity as faculty members engage in a life-long career. In this study we have seen that some faculty members who have tenure teach less often than do those who do not have tenure. However, it appears that these same tenured faculty members 'make up some of this slack' by engaging in more service or administrative activity than other faculty. Clearly, such changes and variations in

productivity need to be examined on an individual basis, by considering the faculty member's work as a whole, in order to determine if there is cause for concern. Current movements towards the introduction of post-tenure review systems, though typically rooted in unfounded concerns about tenured faculty becoming unproductive in the latter stages of a career, can nonetheless be quite useful in helping stress this last point. These post-tenure review systems can also assist those not in higher education appreciate the multidimensionality of the faculty role.

Many post-tenure review systems, rather than adopting a punitive approach, treat faculty careers as developmental processes (Bednash, 1991; Bland & Bergquist, 1997; Licata & Morreale, 1997; Olswang & Fantel, 1980). In these sorts of reviews, faculty who show lower levels of productivity (based on a given institution's accepted definitions of productivity) will be assisted in order to increase productivity. Often, during the implementation of many of these reviews, what has been found is that faculty who have exhibited lower levels of productivity have simply been troubled by the inevitable changes in interest and expertise often associated with being a scholar. Many scholars find that what once made them alive intellectually, no longer drives them. What many of these scholars need is an infusion of support in order to begin new research agendas (Antony & Olswang, 1998). Other scholars have reported that their interests in those activities traditionally rewarded by the institution have decreased, but their interests in other important activities have increased. In the case of some research universities, scholars such as these have been found to be particularly well suited for demanding teaching, student mentoring, or program development work. With the provision of a proper level of support, many of these senior scholars are able to have a profound impact on students' lives and, once again, feel as if they are a viable part of the institution (Antony & Olswang, 1998).

These approaches to reviewing the productivity of faculty resonate with the findings of the present study because, rather than force faculty to remain productive in the same ways over the span of an entire career, they recognize that faculty work can be multidimensional and valuable in its many forms. The future of tenure policy should borrow from the current findings of this study, and from present post-tenure review policy by rewarding all types of faculty work in a way that recognizes the multidimensionality of faculty roles. In the future, if post-tenure faculty work that does not fall under the traditionally recognized forms of productivity is nonetheless encouraged and supported in order to keep tenured faculty viable, then perhaps this opens the door for alternative ways of rewarding tenure. Specifically, pre-tenure faculty work that extends beyond the scope of traditional scholarship may also be recognized as important--and rewarded in kind. It is well recognized that younger faculty, particularly women faculty and faculty of color, are likely to engage in many types of roles--roles that extend into the teaching, service, and committee work domains (Antonio, 1998). A broader conceptualization and recognition of faculty work will therefore have a profound impact on reshaping not only how faculty members engage themselves over the span of a career, but also who becomes successful in the faculty role.

References

Abdel-Ghany, M. (1982). Research productivity and salaries of academic home economists (ERIC Report No.: Ej272211).

Allen, M. (1995). Research productivity and positive teaching evaluations: Examining the relationship using meta-analysis (ERIC Report No.: Ed379705).

Antonio, A. L. (October, 1998). Faculty of color in perspective: The national picture. Paper presented to the conference, Keeping our Faculties : Addressing the recruitment and retention of faculty of color in higher education, Minneapolis, MN.

Antony, J. S. & Olswang, S. (1998). The theoretical and practical implications of a post-tenure review system implementation at a major research university. Manuscript in progress.

Arden, E. (1995). Is tenure "obsolete"? An opinion and a survey (ERIC Report No.: Ej497806).

Bailey, T. G. (1992). Faculty research productivity. ASHE annual meeting paper (ERIC Report No.: Ed352895).

Baldwin, R. G. (1983). Variety and productivity in faculty careers. New Directions for Higher Education, 41(Issues in Faculty Personnel Policies), 63-79.

Baldwin, R. G. (1990). Faculty vitality beyond the research university: Extending a contextual concept (ERIC Report No.: Ej408761).

Bean, J. P. (1998). Alternative models of professorial roles: New languages to re-imagine faculty work. Journal of Higher Education, 69(5), 496-512.

Bean, J. P. (1982). A causal model of faculty research productivity. (ERIC Report No.: Ed216661).

Bednash, G. (1991). Tenure review: Process and outcomes. Review of Higher Education, 15(1), 47-63.

Benjamin, E. (1995). Five misconceptions about tenure. Trusteeship, 3(1), 16-21.

Bieber, J. P., & Blackburn, R. T. (1993). Faculty research productivity 1972-1988: Development and application of constant units of measure (ERIC Report No.: Ej471012).

Blackburn, R. T., & Bently, R. J. (1993). Faculty research productivity: Some moderators of associated stressors (ERIC Report No.: Ej476096).

Blackburn, R. T., & Trowbridge, K. W. (1973). Faculty accountability and faculty workload: A preliminary cost analysis of their relationship as revealed by Ph.D. productivity. Research in Higher Education, 1(1), 1-12.

Bland, C. J., & Bergquist, W. H. (1997). The vitality of senior faculty members: Snow on the roof, fire in the furnace. ASHE-ERIC Higher Education Report, 25(7).

Boice, R. (1984). Reexamination of traditional emphases in faculty development (ERIC Report No.: Ej310305).

Boyer, E. (1990). Scholarship reconsidered: Priorities of the professoriate. Princeton, NJ: The Carnegie Foundation for the Advancement of Teaching.

Centra, J. A. (1983). Research productivity and teaching effectiveness (ERIC Report No.: Ej282974).

Chait, R. P. (1976). Nine alternatives to tenure quotas. AGB Reports, 18(2), 38-43.

Chait, R. P. (1977). Trustees and tenure review. AGB Reports, 19(3), 28-30.

Chait, R. P. (1994). Make us an offer: Creating incentives for faculty to forsake tenure (ERIC Report No.: Ej477905).

Chait, R. P., & Ford, A. T. (1977). The tenure issue (ERIC Report No.: Ed196360).

Chait, R. P., & Ford, A. T. (1982a). Beyond traditional tenure. A guide to sound policies and practices (ERIC Report No.: Ed216598).

Chait, R. P., & Ford, A. T. (1982b). Beyond traditional tenure--Extended probationary periods and suspension of "up-or-out" rule (ERIC Report No.: Ej265916).

Chan, S. S., & Burton, J. (1995). Faculty vitality in the comprehensive university: Changing context and concerns. Research in Higher Education, 36(2), 219-234.

Christensen, K. W., & Jansen, D. G. (1992). Correlates of research productivity for industrial education faculty (ERIC Report No.: Ej449607).

Cotter, W. R. (1996). Why tenure works (ERIC Report No.: Ej520015).

Eash, M. (1983). Educational research productivity of institutions of higher education (ERIC Report No.: Ej282125).

Fairweather, J. S. (1991). Dimensions of academic program quality. Review of Higher Education, 14(2), 155-76.

Feldman, K. A. (1987). Research productivity and scholarly accomplishment of college teachers as related to their instructional effectiveness: A review and exploration (ERIC Report No.: Ej359552).

Finkelstein, M. (1982). Faculty colleagueship patterns and research productivity (ERIC Report No.: Ed216633).

Flanigan, K. S., & et al. (1988). Research productivity profile of allied health faculty (ERIC Report No.: Ej369881).

Golden, J., & Carstensen, F. V. (1992). Academic research productivity, department size

and organization: Further results, comment (ERIC Report No.: Ej448455).

Hauke, R. (1994). Faculty workload activities. Topeka: Kansas Board of Regents.

Hines, E. R., & Higham, J. R. (1996, November). Faculty workload and state policy. Paper presented at the Annual Meeting of the Association for the Study of Higher Education, Memphis, TN.

Holley, J. W. (1977). Tenure and research productivity. Research in Higher Education, 6(2), 181-92.

Huber, R. M. (1992). How professors play the cat guarding the cream: Why we're paying more and getting less in higher education.

Ingalls, W. B. (1982). Increasing research productivity in small universities: A case study (ERIC Report No.: Ej279743).

Jordan, J. M., Meador, M., & Walters, S. J. K. (1989). Academic research productivity, department size and organization: Further results (ERIC Report No.: Ej400552).

Kelly, M. E. (1986). Enablers and inhibitors to research productivity among high and low producing vocational education faculty members (ERIC Report No.: Ej343320).

Kennedy, D. (1995). Another century's end, another revolution for higher education. Change, 27(3), 8-15.

Kohlenberg, E. M. (1992). Faculty research productivity and organizational structure in schools of nursing (ERIC Report No.: Ej451024).

Layzell, D. T. (1996). Faculty workload and productivity: Recurrent issues with new imperatives. The Review of Higher Education, 19(3), 267-281.

Levin, S. G., & Stephan, P. E. (1989). Age and research productivity of academic

scientists (ERIC Report No.: Ej404056).

Licata, L., & Morreale, J. (1997). Post-tenure review: Policies, practices, and precautions. New Pathways Working Papers, 12, American Association for Higher Education.

Linsky, A. S., & Straus, M. A. (1975). Student evaluations, research productivity, and eminence of college faculty. Journal of Higher Education, 46(1), 89-102.

McGee, G. W., & Ford, R. C. (1987). Faculty research productivity and intention to change positions (ERIC Report No.: Ej367677).

McGuiness, A. (1994). The states and higher education. In P.G. Altbach, R. O. Berdhal, & P. J. Gumport (Eds.), Higher education in American society (3rd ed., pp. 155-180). Amherst, NY: Prometheus.

Meador, M., Walters, S. J. K., & Jordan, J. M. (1992). Academic research productivity: Reply, still further results (ERIC Report No.: Ej448456).

Michalak, S. J., Jr., & Friedrich, R. J. (1981). Research productivity and teaching effectiveness at a small liberal arts college (ERIC Report No.: Ej253948).

Miller, M. A. (1994). Pressures to measure faculty work. In J. F. Wergin (Ed.). Analyzing faculty workload (pp5-14). New Directions for Institutional Research, No. 83. San Francisco, CA: Jossey-Bass Publishers.

Neumann, Y. (1979). Research productivity of tenured and nontenured faculty in U.S. universities: A comparative study of four fields and policy implications. Journal of Educational Administration, 17(1), 92-101.

Noser, T. C., Manakyan, H., & Tanner, J. R.. (1996). Research productivity and perceived teaching effectiveness: A survey of economics faculty. Research in Higher Education, 37(3),

299-321.

Olswang, S. G., & Fantel, J. (1980). Tenure and periodic performance review: Compatible legal and administrative principles. Journal of College and University Law, 7, 1-2.

Over, R. (1982). Does research productivity decline with age? (ERIC Report No.: Ej272869).

Park, S. M. (1996). Research, teaching, and service: Why shouldn't women's work count? Journal of Higher Education, 67(1), 46-84.

Presley, J. B., & Engelbride, E. (1998). Accounting for faculty productivity in the research university. The Review of Higher Education, 22(1), 17-37.

Ramsden, P. (1994). Describing and explaining research productivity (ERIC Report No.: Ej495067).

Ratliff, G. L. (1996). "Classical 'tenure trek': In the search for new academic frontiers, 'don't lower the bridge, raise the water.'" (ERIC Report No.: Ej530547).

Ross, S. M., & Donnellan, L. M. (1991). Consensus falsely presumed: An organizational culture approach to defining the research productivity of agricultural college faculty (ERIC Report No.: Ed343187).

Rushton, J. P., & Meltzer, S. (1979). Research productivity, university revenue, and scholarly impact of 31 Canadian universities (ERIC Report No.: Ej214540).

Schultz, J. B., & Chung, Y. L. (1988). Research productivity and job satisfaction of university faculty (ERIC Report No.: Ej390115).

Schuster, J. H. (1989). The personal dimension: Faculty development. Thought and Action, 5(1), 61-72.

Sefein, N. A. (1973). A systems approach for increasing research productivity among college educators.

Smith, R. E. (1983). Research productivity in graduate departments of political science in the south and southwest (ERIC Report No.: Ed230483).

Tien, F. F., & Blackburn, R. T. (1996). Faculty rank system, research motivation, and faculty research productivity: Measure refinement and theory testing (ERIC Report No.: Ej520096).

Tierney, W., G. (1998a). Academic community and post-tenure review. Academe, 83(3), 23-25.

Tierney, W., G. (1998b). Tenure and community in academe. Educational Researcher, 26(8), 17-23.

Wanner, R. A. (1981). Research productivity in academia: A comparative study of the sciences, social sciences and humanities (ERIC Report No.: Ej255582).

West, L. H. T. (1980). Publication rates and research productivity. Vestes, 23(2), 32-37.

Zumeta, W. (1998). Public accountability to the state in the late twentieth century: Time for rethinking? Paper proposal submitted for presentation at the 1999 annual meeting of the Policy Studies Journal symposium on Democracy and the Academy.

Table 1: Percentage of time college faculty spent in Fall, 1992 on various activities, and average number of weekly hours worked, by tenure status (n = 20,274)

Percentage of time Spent engaged in:	Tenure Status: Tenured (n = 9,590)	Pre-tenure (n = 4,200)	Not on Tenure Track (n = 4,277)	No Tenure System (n = 2,207)
Teaching	55.14	57.53	56.03	65.15
Research	16.12	18.18	9.72	5.74
Administrative Work	14.27	9.02	10.54	13.32
Service Activities	6.44	7.50	10.60	6.81
Professional Development	4.89	4.83	5.80	5.13
Consulting	2.63	2.32	6.46	3.40
Average Number of Hours per Week	57.47	57.04	48.22	50.81

Table 2: Percentage of time college faculty spent during the fall term of 1992 on various activities, and average number of weekly hours worked, by tenure status and institutional type (n = 13,790)

Percentage of time Spent engaged in:	Tenure Status:									
	Tenured (n = 9,590)					Pre-tenure (n = 4,200)				
	Research U's	Doctoral U's	Comp. Colleges	Liberal Arts Colleges	Two-year Colleges	Research U's	Doctoral U's	Comp. Colleges	Liberal Arts Colleges	Two-year Colleges
Teaching	37.62	45.26	57.51	58.55	68.14	39.64	50.19	63.34	65.12	69.66
Research	34.50	30.66	19.79	15.97	8.48	37.81	32.06	20.53	14.52	9.82
Administrative Work	14.42	14.89	14.81	15.03	14.50	7.80	9.95	8.29	11.52	4.67
Service & Other Activities	13.46	9.19	7.89	10.45	8.88	14.75	7.80	7.84	8.84	15.85
Average Number of Hours per Week	56.41	54.22	51.93	52.33	46.64	57.23	55.03	51.95	54.51	47.46

Table 3: Results of Factor Analysis for Faculty Productivity Scales

Scale and composite items	Cronbach's Alpha
Traditional Scholarly Productivity Scale (TS)	.79
Number of referred articles	
Number of books and chapters	
Number of book reviews	
Number of reports	
Number of presentations and exhibits	
Nontraditional Scholarly Productivity Scale (NS)	.71
Number of undergraduate committees	
Number of graduate committees	
Total non-student committees	
Total hours per week teaching for credit	
Total contact hours per week of individualized instruction	
Total classroom credit hours	
Broadly-defined Scholarship Scale (BS)	
A standardized composite of TS and NS scales	N/A

Table 4: Mean frequency of traditional and nontraditional forms of scholarship, by tenure status (n = 20,274)

	Tenure Status:			
Traditional Forms of Scholarly Productivity: [a]	Tenured (n = 9,590)	Pre-tenure (n = 4,200)	Not on Tenure Track (n = 4,277)	No Tenure System (n = 2,207)
Number of referred articles	3.62	2.84	1.83	0.93
Number of books and chapters	1.15	0.79	0.61	0.42
Number of book reviews	0.64	0.42	0.46	0.41
Number of reports	3.01	2.20	2.93	1.93
Number of presentations and exhibits	6.69	6.61	6.25	5.27
Nontraditional Forms of Scholarship: [b]				
Number of undergraduate committees	0.92	0.66	0.32	0.56
Number of graduate committees	6.13	4.00	1.32	1.46
Total non-student committees	7.06	4.65	1.64	2.02
Total hours per week teaching for credit	8.60	9.32	7.70	10.70
Total contact hours per week of individualized instruction	10.70	10.08	8.26	14.31
Total classroom credit hours	7.71	8.11	6.85	9.11
TS Scale	3.02	2.57	2.41	1.79
NS Scale	6.85	6.14	4.34	6.36
BS Scale	4.93	4.35	3.37	4.07

Notes: [a] Scholarly forms of productivity measured over last two years;
[b] Nontraditional forms of scholarship measured over the fall term of 1992.
All tenure status pair-wise differences significant at $p < .001$.

Table 5: Frequencies during the fall term of 1992 on traditional and nontraditional forms of scholarship, by tenure status and institutional type (n = 13,790)

	Tenure Status:									
	Tenured (n = 9,590)					Pre-tenure (n = 4,200)				
Traditional Scholarly Productivity: [a]	Research U's	Doctoral U's	Comp. Colleges	Liberal Arts Colleges	Two-year Colleges	Research U's	Doctoral U's	Comp. Colleges	Liberal Arts Colleges	Two-year Colleges
Referred articles	3.89	2.38	0.89	0.81	0.14	3.13	2.08	1.03	0.81	0.20
Books and chapters	1.21	1.05	0.44	0.53	0.14	0.85	0.62	0.39	0.39	0.00
Book reviews	0.89	0.76	0.45	0.55	0.14	0.47	0.47	0.35	0.39	0.14
Reports	2.68	2.12	1.30	0.77	0.54	2.10	1.58	1.25	0.82	0.63
Presentations and exhibits	6.44	5.37	3.64	3.40	1.89	6.15	5.95	4.89	3.74	1.86
Nontraditional Scholarly Productivity: [b]										
Number of undergraduate committees	1.22	0.95	0.60	0.66	0.00	1.00	1.00	0.99	1.43	0.00
Number of graduate committees	2.51	1.88	0.83	0.23	0.00	1.10	1.00	0.52	0.21	0.00
Total non-student committees	8.13	5.97	2.80	2.51	0.18	5.06	4.34	2.03	1.80	0.17
Total hours per week teaching for credit	6.79	8.47	10.90	10.54	15.81	7.10	8.58	11.86	11.27	17.10
Total contact hours per week of individualized instruction	6.80	8.50	10.19	10.04	15.10	7.54	8.60	11.34	11.17	15.90
Total classroom credit hours	6.40	7.20	9.73	9.12	12.44	6.58	7.77	10.27	9.70	12.62
Standardized composite of Traditional Scholarship	3.02	2.33	1.34	1.21	0.57	2.54	2.14	1.58	1.23	0.56
Standardized composite of Nontraditional Scholarship	5.31	5.49	5.84	5.51	7.25	4.73	5.21	6.16	5.93	7.63
Broad Scholarship Scale	4.17	3.91	3.59	3.36	3.91	3.64	3.67	3.87	3.58	4.09

Notes: [a] Scholarly forms of productivity measured over last two years; [b] Nontraditional forms of scholarship measured over the fall term of 1992. All within-institution tenure status comparisons (except for those that are underlined) are significantly different at $p < .001$.